XXXIX.—*Some Points in the Anatomy of* Acanthidositta chloris, *with some Remarks on the Systematic Position of the Genera* Acanthidositta *and* Xenicus.

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(Plate XIII.)

Introductory.

Only one other paper—by the late W. A. Forbes—has ever been published dealing with the anatomy of the aberrant and little-known forms *Acanthidositta* and *Xenicus*. In this paper the author deals only with the syrinx, patagial muscles, and skull and podotheca.

While Forbes devoted his attention primarily to *Xenicus*, though he dissected specimens of both genera, I have perforce had to confine my investigations to *Acanthidositta*; but probably it will be found that *Xenicus* does not differ therefrom in any important particular. In so far as the syringes of these two genera are concerned, Forbes assures us that in "all points *Acanthidositta* appears to agree (with *Xenicus*) in every essential respect."

I have been enabled to bring to light some extremely interesting facts concerning *Acanthidositta*, which in some cases seem to conflict with the statement made by Forbes some seven-and-twenty years ago.

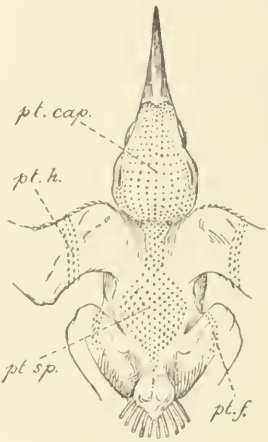
For the material on which this work is based I have to thank my kind friends Mr. W. R. Ogilvie-Grant and Mr. F. E. Beddard, F.R.S.

Pterylography.

Pteryla capitis (text-fig. 34, *pt.cap.*, p. 604).—This extends from the base of the culmen backwards in the form of a narrow band between the eyes, which are prominent, to expand so as to cover the parietal and occipital region of the cranium, and sweeping downwards passes forwards along the lower jaw. From its origin at the culmen the tract branches out on either side to the lores, and this wing extends backwards over the eyelids near its free edge, leaving a bare space

between the branch and the main tract. In other words, there is a distinct loreal tract, cut off from the rest of the *pt. capitis*; from this sub-tract the tiny feathers which fringe the eyelid immediately behind its rim are derived.

Text-fig. 34.



Dorsal aspect of *Acanthidositta chloris*, prepared to shew the pterylosis. This specimen had been preserved in formol, and the consequent contraction of the neck has rendered it impossible to shew the neck-tract.

pt.cap. = pteryla capitis; *pt.f.* = pteryla femoralis; *pt.h.* = pteryla humeralis; *pt.sp.* = pteryla spinalis.

The free edge of the eyelid, it should be remarked, is produced into a thin dermal fringe of considerable width, recalling that of *Prionops*—a fact which does not appear to have been previously noticed.

Pt. colli dorsalis.—This is a broad tract, not closely investing the neck, but rising from a duplication of the skin of the neck, which, forming a thin sheet along the mid-dorsal line, spreads out along its free edge to afford the necessary support for the tract. Thus, in section, the tract is T-shaped.

Pt. spinalis.—This tract forms a tolerably broad band along the middle of the back, expanding over the pre-iliac region into an ovoid saddle, which, just caudad of the

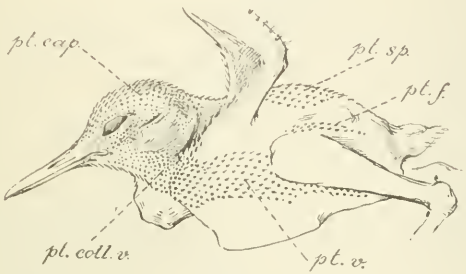
acetabular region, gives place to a couple of rows of semi-plumous feathers, continued backwards to the oil-gland.

Pt. caudalis.—There were ten rectrices, all moulting.

Pt. coll. ventralis.—This is a fairly broad tract, branching high up the neck, and passing backwards into the

Pt. ventralis (text-fig. 35, *pt.v.*).—This tract does not shew the usual division into an inner and an outer branch, but suddenly narrows at a point corresponding with the position of the knee when flexed; from this point inwards it is

Text-fig. 35.



Lateral aspect of the same specimen, to shew the pterylosis. The fold of skin in which the *pteryla colli dorsalis* is seated is well shewn.

Additional letters : *pt.v.*=pteryla ventralis ; *pt.col.v.*=pteryla colli ventralis.

continued backwards in the usual manner to the cloaca. Over the breast, in the region enclosed by the ventral tract, there occur numerous but sparsely scattered and minute brush-like tufts representing degenerate contour-feathers.

Pt. humeralis (text-fig. 34, *pt.h.*).—Short and feebly developed.

Pt. femoralis (text-fig. 34, *pt.f.*).—Like the *pt. humeralis*, very feebly developed.

Pt. alaris.—The wing is eutaxial; there is no carpal diastema. Primaries 10; 10th long. Carpal covert moderately long, and slender carpal remex. Secondaries 9, the last (9th) degenerate and scarcely distinguishable from its covert. Possibly what appears to be the covert of the 10th remex is actually the 11th remex, since this feather is longer

than the covert of remex 9. By way of confirming this hypothesis, it is to be remarked that at the base of this possible 11th remex there is found a minute feather which would represent the covert of remex 10, leaving the vestigial 11th without a covert.

Tectrices :—

T. majores.—The major coverts of the secondaries present no features worthy of comment. On the manus they are markedly degenerate, being shorter than those of the secondaries, and decreasing rapidly in length from the wrist outwards.

T. mediæ.—This series calls for no comment.

T. minores.—These are represented by one complete and one incomplete row.

T. marginales.—This series appears to be quite typical, and offers no points for comment.

Ala spuria.—Only two remiges are borne on the pollex. The outermost feather is of great length—a feature, it may be noted, which also obtains in *Troglodytes.*

Rhamphotheca.—Simple: the external nares are peculiar, in that they open directly upward in a tumid aperture with round lips (text-fig. 37, A, *na.*, p. 608).

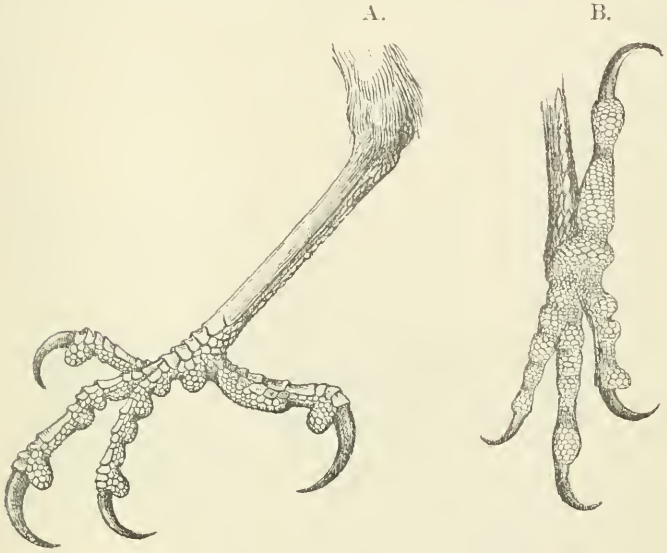
Podotheca (text-fig. 36, A, B).—Acrotarsium invested by a simple horny sheath, which, by a study of the nestling podotheca, is found to be made up by the fusion of about three large scales.

Planta.—This is covered by a series of oblong and moniliform scales. According to Forbes's description of the planta of *Xenicus,* these scales were suppressed along the middle of the series by the meeting of the acrotarsal sheath in the middle line. This podotheca is of the type known as *pycnaspidean.*

Claws.—Long and curved, especially the hallux. The soles of the feet (text-fig. 36, B) demand special mention here, inasmuch as the under surface of the toes shews interesting proofs of adaptation to a perching habit met with also among other Passeres, e. g. *Troglodytes*, but to a less marked degree. Thus, the under surface of each of the toes bears

immediately behind the claw a soft and prominent pad covered with small papillæ; behind this is a strongly constricted area covered with transversely elongated papillæ; behind this constriction there succeeds two or more well-marked pads covered with large papillæ. The size and position of

Text-fig. 36.



A. Outer view of left foot, to shew the podotheca and form of the toes.
B. Sole of foot, to shew the slight syndactylism and the peculiar constriction between the pads.

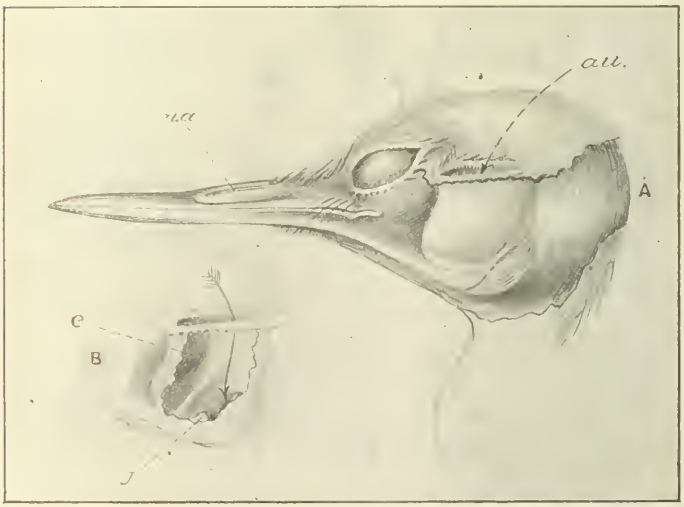
these pads are determined by the length of the phalanges; at the articulation of each joint the skin, as on the under surface of our fingers, thins out and becomes creased. The figure (text-fig. 36) should make these points clear.

In this general topographical survey we may fittingly include an account of the form and position of the external aperture of the ear, which appear to be unique (text-fig. 37, A, B, p. 608). The description thereof is as follows :—

The usual circular aperture at the base of the lower jaw, which makes the passage to the middle ear, is in *Acanthido-*

sitta replaced by a narrow horizontal slit opening rather higher than the level of the top of the normal aperture, and only a little below the level of the posterior canthus of the eyelid. It extends forwards on to the eyeball and backwards on to the skull, its width exceeding the width of the eyelids. Opening horizontally it appears normally to be closed like the pocket of a coat. The chamber to which it gives access is, when explored with a probe, found to be capacious, extending downwards to the level of the quadrato-jugal bar, forwards to the gape, and backwards to the extreme hinder angle of the lower jaw.

Text-fig. 37.



A. Left side view of head of *Acanthidositta chloris*, to shew the form of the nostrils and the remarkable aperture of the ear after removal of the outer skin.

B. Shewing the interior of the aural chamber after cutting away its outer wall.

na. = nostril; *a.u.* = aural aperture (slightly forced open); *e.* = eye; *j.* = jaw. The arrow in the lower figure denotes the passage to the middle ear.

After removal of the outer skin, it is clear that this pocket is formed by the expansion of the normally invaginated skin

met with in all birds in this region. It is attached anteriorly by delicate tendinous strands to the quadrato-jugal bar immediately below the eye and caudad by delicate fascia to the hyoid.

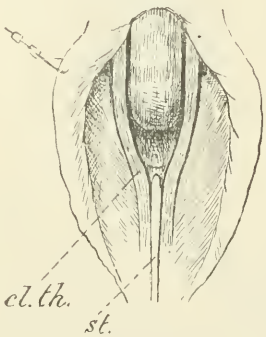
Myology.

The following muscles are all that appear to call for special remark in this paper.

Dermal Muscles.

Cleido-thyroideus (text-fig. 38).—Arising normally from the larynx, this muscle runs along mesiad of and closely attached to the *pteryla colli ventralis* until within a short distance of the furcula, when it suddenly leaves the skin, and

Text-fig. 38.



Dissection of the breast of *Acanthidositta chloris*, to shew the insertion of the *cleido-thyroideus* muscles (*cl.th.*).

running along the ventral $\frac{1}{3}$ of the bone in question it rapidly attains the middle line; there it runs backwards for a short distance, separated from its fellow of the opposite side only by the narrow *carina sterni*.

Latissimus dorsi dorso-cutaneus.—This is well developed and arises unusually far back—from the roof of the pelvis in the region of the anti-trochanter. Extending forwards immediately under the skin, laterad of the *pt. spinalis*, it passes eventually into the *cucullaris dorso-cutaneus*.

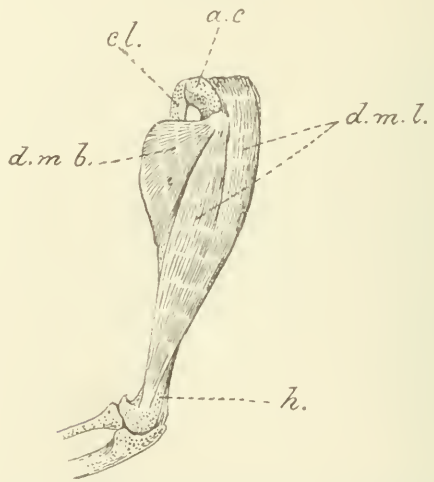
Dermo-cleido-dorsalis.—This takes the form of a stout

but narrow band, in place of the more usual triangular form.

Pectoralis abdominalis.—This muscle was barely traceable.

Deltoideus major (text-fig. 39).—This muscle is peculiar in that in the splitting-up into brevis and major portions a part of the brevis portion arising from the *os humero-scapulare* has become cut off to form the principal part of the belly of the longus portion. As a result, there is a strong tendency towards the separation of this mass to form two muscles

Text-fig. 39.



Dissection of the left wing of *Acanthidositta chloris*, to show the *deltoides major et minor*.

inserted by a common tendon into the usual tubercle above the radial condyle. A very little further splitting would divide the muscle into three distinct portions, one inserted into the deltoid crest, and the other two into the tubercle of the radial condyle of the humerus. The highly specialised condition of these muscles shown by *Acanthidositta* I have not met with elsewhere.

Pectoralis propatagialis brevis.—This is represented by a slender tendon inserted into the *tensor patagii brevis* just before it passes into the characteristic tendon.

Tensor patagii brevis.—The tendon of this muscle is partly embedded in the belly of the *extensor metacarpi radialis longus.*

Thigh-Muscles.

The normal Passerine formula obtains in this genus :— A . XY.

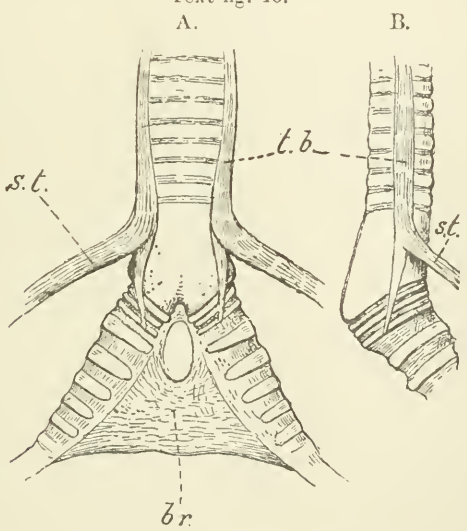
Caud-ilio-femoralis (*femoro-caudal*).—This muscle is moderately well developed : the accessory head is wanting.

Caud-ilio-flexorius.—Both divisions of this muscle are present and fairly well developed.

The Syrinx (text-fig. 40, A, B).

The syrinx of *Acanthidositta* is of the tracheo-bronchial type, and formed apparently by a fusion of the lower rings

Text-fig. 40.



A. Syrinx of *Acanthidositta chloris*, front view, shewing the intrinsic muscles and their insertion into the bronchial rings, and the form of the syringeal box and bronchi.

s.t. = sterno-trachealis muscle; *t.b.* = tracheo-bronchialis muscle.

B. Side view of same.

of the trachea. The resultant tube has the inferior border of its anterior aspect marked by a moderately deep notch.

The apparent first bronchial ring is really made up of two closely apposed rings, succeeded by six or seven half hoops moderately wide apart. The bronchidesmus is well developed.

The *tracheo-bronchialis* muscle extends the whole length of the trachea, terminating in a few delicate strands of muscle inserted into the middle of what answers to the 1st bronchial ring. Just before its insertion, near the bottom of the syringeal box, it gives off a strong *sterno-trachealis*.

It will be remarked that the syrinx of *Acanthidositta* is peculiar; it recalls that of *Pipra* on the one hand and of *Todus* on the other, and differs widely from the typical Synallaxine syrinx, which is tracheal.

Forbes (2) described and figured the syrinx of *Xenicus*, comparing it with that of *Todus*. He does not seem to have examined the syrinx of *Acanthidositta*, and this may well account for the lack of agreement between my observations on the syrinx of this bird and the description and figures by Forbes of the syrinx of *Xenicus*, which he assumed was the same in both genera under consideration.

In *Xenicus*, according to Forbes, the intrinsic muscle terminates at the *top* of the syringeal box, as in *Todus*; in *Acanthidositta* it as certainly extends beyond this on to the first bronchial ring, as already described.

Judging by Forbes's description (2), it would seem that *Xenicus* is more degenerate, in so far as the musculature of the syrinx is concerned, at any rate, than *Acanthidositta*. Possibly, however, the differences between the syringes of these two genera, as shown by my dissection of the last-named, are apparent rather than real, the discrepancies being due to our individual interpretation of the facts, which are by no means easy to ascertain. The main point wherein I differ from Forbes concerns the termination of the intrinsic muscle. According to Forbes, this terminates just before reaching the top of the syringeal box. My dissections seem to shew that this muscle ends, in the form of very degenerate fibrous tissue, on the third bronchial ring. There can be no doubt but that the figures of the syrinx of *Xenicus* in Forbes's paper lose much of their value by their extremely

diagrammatic characters. As to *Acanthidositta*, he remarks that it agrees, in the structure of the syrinx, in every essential respect with *Xenicus*.

The Intestinal Convolutions and Gizzard.

The intestinal convolutions, unravelled on Dr. Chalmers Mitchell's system, are of the type which he has shown to be characteristic of the Passerines.

The gizzard when opened displayed certain characters in the lining membrane worthy of record.

The cardiac extremity, as far as the level of the cardiac and pyloric apertures, was lined with a simple mucous membrane; all the remaining cavity below these apertures was thrown into longitudinal folds, transversely striated and of a chitinous texture.

Osteology.

The skeleton of *Acanthidositta* presents many striking points of resemblance with the Synallaxine skeleton, upon which we shall enlarge presently.

The Skull (Pl. XIII. figs. 1–5).—One of the most striking superficial characters of the skull of *Acanthidositta* is the marked depression and great width of the cranium. The interorbital region of the frontals is much constricted. There is a well-marked cerebellar prominence, but the supraforaminal and lambdoidal ridges are ill-defined. The lateral occipital wings are but feebly developed, forming but a low ridge caudad of the tympanic membrane.

The basitemporal plate is inflated so as to form a pair of tumid swellings separated by a median groove. By the fusion of its free edge with the ossified connective tissue forming the anterior wall of the *recessus tympanicus anterior*, the Eustachian grooves have been converted into closed channels. The parasphenoidal rostrum is long and slender, and passes abruptly forwards from the cranium.

The tympanic cavity is moderately large, shallow, oval in outline, and looks downwards, outwards, and forwards. The mesial border of its slightly raised rim extends inwards as far as the level of a line running parallel with the long axis of

the skull from the outer margin of the foramen magnum. The lateral occipital ring is continued outwards and forwards beyond the tympanic membrane, so as to form a scroll-shaped niche or pocket. The uppermost border of this flange does not extend above the level of the tympanic rim. Immediately above this flange, and separated therefrom by a notch, is a low ridge running forwards for a short distance. In *Synallaxis orbignii*, for example, this notch-divided ridge is continuous with the flange.

After the removal of the tympanic membrane this cavity will be found to be extremely shallow, leading upwards and backwards, with a mass of diploid tissue in which a small and posterior tympanic recess can be traced—the rudiments apparently of the larger recess usually found in birds. The anterior tympanic recess which opens into the floor of the antero-ventral moiety of the cavity is somewhat more developed. The superior recess is apparently wanting in the Passerine skull.

A "squamosal prominence" is not distinguishable in this skull; and there is but the merest apology for a *processus zygomaticus squamosi*; this process is separated from the termination of the free end of the rim of the tympanic cavity only by a small, barely perceptible notch.

The otic and squamosal heads of the quadrate are placed close together.

The orbit is moderately large, and but little protected from above, the interorbital region of the frontal being deeply cut away. The interorbital septum is membranous, but strengthened by a bony bar extending in the form of a slender curved rod backwards from the middle of the free hinder border of the mesethmoid, and terminating just above the optic foramen.

The lachrymal is wanting; I searched carefully in two separate skulls for evidence of this bone and found none. The lachrymo-nasal fossa is greatly reduced.

The mesethmoid is extremely small, and is partly filled up by the large and inflated antorbital plate. The nostrils are of the schizorhinal type (p. 619).

The exact limitations between the maxilla and pre-maxilla cannot be made out; but this portion of the jaw is long and slender, triangular at its base, and has a flattened culmen and a slightly sinuous free edge. There is the faintest possible trace of a notch at the tip of this beak.

The maxilla, indistinguishably fused with the palatine, bears unusually long and slender maxillo-palatine processes, formed apparently by the backward production of the infero-internal angle of the maxillo-palatine plate—that is to say, these processes appear to spring from the point where the quadrato-jugal bar enters the maxilla. The processes are continued backwards so as to terminate mesiad of the large and spongy antorbital plate in the form of a strap-shaped blade with a rounded free end.

In the quadrato-jugal bar no separate elements can be distinguished.

The *vomer* is of considerable size, and presents a pair of long limbs and a broad deeply notched free end. Anteriorly, for nearly half its length, it rests upon the maxillo-palatine processes.

The *palatines* send downwards from their dorsal border a deep concavo-convex plate, the concavity inwards. The free edge of this plate at the articulation of the pterygoids forms a deep blade-shaped keel. From the convex surface there runs forwards a long slender shaft to fuse with the maxilla, and this shaft may be regarded as prolonged backwards into a short spur, the "transpalatine process."

The *pterygoids* are moderately long, sigmoidally curved bones having a slipper-shaped free end, which is applied to the sides of the basisphenoidal rostrum. The palatines articulate by an oblique joint with the outer border of this elliptical "foot," which apparently represents the *hemi-pterygoid.*

Comparative Remarks.

The skull of *Acanthidositta* appears to agree most nearly with that of the Synallaxine birds; in some particulars, indeed, this resemblance is very striking. As I shall shew

presently, this skull also presents much in common with forms not included in the subfamily. Of these, some must undoubtedly be placed within the group; others are nearly related thereto, and this not on the evidence of the skull alone, other parts of the skeleton tell the same tale.

The skull of *Acanthidositta* agrees with a considerable number of the forms at least which make up the subfamily *Synallaxinæ* of the 'Catalogue of Birds of the British Museum,' in that the anterior nares are of the Schizorhinal type, while the maxillo-palatines are long and slender, embracing the under surface of the vomer. Further examination may shew that some of the species now included in this group do not share this peculiarity. On the other hand, I have discovered that several species included in allied subfamilies are Synallaxine in this particular at least, and thereby differ from the forms with which they are associated.

Among the skulls which present, in the matter of the form of the external nares and of the maxillo-palatine, a very close agreement, there will be found on the other hand slight, but definite, differences in the form of the tympanic cavity.

In *Acanthidositta* we have the simplest, and therefore probably the most primitive, condition of this region; where the tympanic wing of the exoccipital is but slightly developed, and does not extend upwards beyond the level of the distal border of the tympanic rim—for the attachment of the tympanum. The postorbital process and the *processus articularis squamosi* are represented by mere tubercles. In *Synallaxis* and *Siptornis*, where the tympanic cavity has shifted downwards and inwards still more than in *Acanthidositta*, so as to open on the ventral instead of the lateral aspect of the skull, the tympanic wing rises above the level of the periphery of the tympanum; while the *processus zygomaticus squamosi* has become a broad plate extending upwards to join the postorbital process, but bearing a fenestra between them. This is most marked in *Siptornis*. In *Cinclodes*, *Pseudocolaptes*, and *Homorus* the postorbital process is more strongly developed, and distinct from the

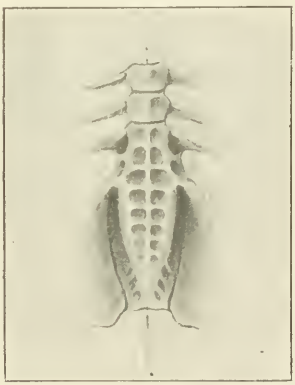
proc. squamosi; as in the foregoing types, the tympanic wing rises above the periphery of the tympanum.

But in *Cinclodes* there is a low ridge running from the *processus squamosi* to the free projecting upper end of the tympanic wing, and in *Homorus* the ridge becomes a broad outstanding ledge forming, by its junction with the tympanic wing, a pent-house over the head of the quadrate. In *Pseudocolaptes* there is a similar ridge running from the *processus articularis squamosi*, which runs up to join the tympanic wing and so forms a shallow overhanging pent-house above the tympanic cavity. There is no trace of this last in *Acanthidositta*.

The Vertebral Column.

In so far as the presynsacral vertebræ of *Acanthidositta* are concerned, there is little that need be said. All are

Text-fig. 41.



Ventral aspect of synsacrum, to shew the deep pittings.

free. The last five cervical and the first two thoracic bear well-marked hypapophyses, and this is true also of the Synallaxine forms already referred to.

The synsacral vertebræ of *Acanthidositta* are remarkable for a series of deep pits which occur in pairs separated by a median bony ridge along nearly the whole ventral aspect of this fused mass (see text-fig. 41). Only the last four caudals lack these pits, and this because the centra are laterally

compressed. The synsacrum is relatively long and narrow, the transverse processes shortening rapidly from the 1st sacral backwards. The bone at the bottom of the pit (inverted during life) is reduced to a paper-like thinness.

Only in *Synallaxis*, so far, have I found these pits as well developed. In *Siptornis*, *Homorus*, *Cinclodes*, and *Pteroptochus* they are only imperfectly developed anteriorly, posteriorly they are deep; in *Pipra* the reverse is the case. In *Pseudocolaptes* and *Philepitta* they are wanting altogether, In other birds not even remotely related to these forms I find, here and there, minute traces of these pits—such occur, for example, in *Turdus*.

The Ribs.

Five pairs of ribs reach the sternum. The uncinate processes are very long and slender, and this obtains also in the *Synallaxinæ*.

The Shoulder-girdle and Sternum.

The shoulder-girdle of *Acanthidositta* is Passerine in type. The *coracoid* and *corpus sterni* are subequal in length; there is no procoracoid processes.

The *furcula* is only slightly arched; and the expanded free end does not overlap on to the acromion process of the scapula. The *hypocleideum* is small.

The *scapula* is abruptly curved at its free edge.

The *corpus sterni* bears a moderately well-developed keel; the *spina interna* is wanting, and the *spina externa* is only very slightly forked at its free end, thereby approaching *Philepitta*, where the fork is wanting. In *Synallaxis*, *Siptornis*, and *Cinclodes*, it is to be noted, the *spina externa* is by no means well developed.

The *anterior lateral processes* are long, slender, and directed forwards; the *posterior lateral processes* are wonderfully long and have slightly expanded free ends.

The Pelvic Girdle.

The innominate of *Acanthidositta* recalls that of *Pipra* in that the ischio-pubic fissure is extremely narrow, whereas in

the Synallaxine forms it is of great width, owing to the fact that the ischium sends down on to the pubes a long slender rod of bone. In *Pipra*, as in *Acanthidositta*, the transverse processes of the synsacrum decrease in length from the sacral region backwards; but the innominate of *Acanthidositta* is peculiar, in that its dorsal plane is very narrow. The *pre-ilia* are widely separated and relatively short. The ischia are produced backwards for a considerable distance, lying parallel with the pubes, and thus practically closing the ischio-pubic fissure. The pubes are moderately long, slender, and bowed slightly downwards.

Summary.

It is now just seven-and-twenty years ago since Forbes (2) laid the foundation-stone of our knowledge of the anatomy and systematic position of *Acanthidositta* and *Xenicus*. These curious forms had hitherto been referred to a position within the "*Certhiidæ*"—an "Oscinine" group, with which, as Forbes shewed, they have nothing whatever to do. "As regards the affinities of the *Xenicidæ*," wrote this author, "the 'haploophone' form of their syrinx, combined with the complete loss of a vinculum, shews that it is only with the *Pipridæ* (including the *Cotingidæ*), *Tyrannidæ*, *Pittidæ*, and *Philepittidæ* that they can be compared. From all of these they differ markedly, however, in the number of rectrices, the ocreate tarsus, and the nature of the syrinx, the latter never having the form of a complete bony box, and never lacking a bronchial 'intrinsic' muscle in any of the families just enumerated. The *Pittidæ* they approach somewhat in their general *facies*, short tail, and long tarsus, though the tarsal scutellation is different in the two forms."

My own conclusions on this matter do not altogether harmonise with those just quoted. The evidence, I venture to think, rather favours the view that the nearest allies of these birds are the *Furnariidæ* of Garrod. The same form of the maxillo-palatine processes and the schizorhinal nares seem to be met with in all the *Furnariidæ* and in *Acanthidositta*. The peculiar form of the nares was, by the way, a

point which Forbes failed to notice in his report on *Xenicus*. He describes the nostrils of *Xenicus* indeed as *holorhinal*, but in this he was probably mistaken.

The form of the syrinx and other small features will be held probably a sufficient bar to prevent the introduction of *Acanthidositta* and *Xenicus* into the *Furnariidæ*, but they may be allowed for the present to occupy a place midway between the *Pipridæ* on the one hand and the Tracheophone types on the other.

So far this sequence promises well; for from the *Pipridæ* we pass to the *Cotingidæ*, and thence to the *Eurylæmidæ*. Dr. Gadow, like Forbes, considers that the *Xenicidæ* are nearly allied to the *Pittidæ*.

Garrod was right, I think, in forming a separate family—the *Furnariidæ*—for those Tracheophone types which agree in having schizorhinal nares and long and slender maxillopalatine processes. *Acanthidositta*, but for its haploophone syrinx, might almost be included in this family. This organ, however, with the peculiar aural aperture and the primitive condition of the *deltoides major* muscles, forms a combination of characters perhaps sufficiently important to justify the formation of a separate family, the *Acanthidosittidæ*, for the reception of the genera in question.

The *Furnariidæ*, by the way, will have to be further enlarged to receive *Homorus*, *Cinclodes*, and *Pseudocolaptes* which are schizorhinal, the typical *Dendrocolaptidæ* being holorhinal.

The *Tyrannidæ* will, I believe, prove to be less closely related to the Tracheophone forms than is generally supposed; their affinities appear rather to be with the *Pittidæ*.

Until I have completed my study of the Formicaroid and Dendrocolaptoid forms I can come to no more definite conclusion as to the systematic position of the *Acanthidosittidæ* than has here been offered. Further investigation will, I suspect, shew that the *Acanthidosittidæ* stand nearest the *Synallaxinæ*.

The problem of the classification of the non-Oscinine Passeres is bristling with difficulties, and has produced

several distinct systems of arrangement—Garrod, Forbes, Sclater, Salvin and Godman, Sharpe, and Gadow being among the most notable contributors. Each, in attempting to solve the riddle, has arrived at a separate solution!

In that vast treasure-house, the British Museum of Natural History, much new material has collected, and this I hope to draw upon in attacking the problem afresh.

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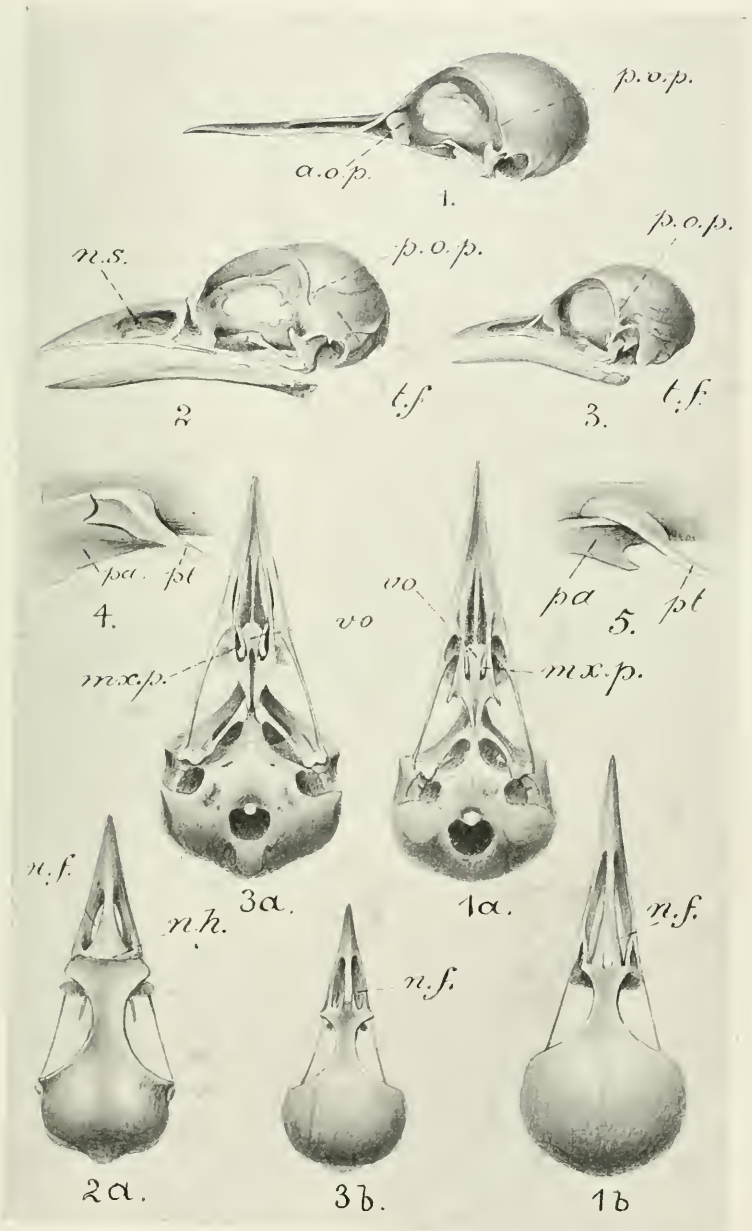
EXPLANATION OF PLATE XIII.

Fig. 1. Skull of *Acanthidositta chloris*, side view to shew the post-orbital region, schizorhinal nares.
1*a*. The same skull, to shew the palate.
1*b*. The same skull, top view, to shew the form of the nares.
Fig. 2. Skull of *Pitta baudi*, side view, to shew the postorbital region for comparison with the skull of *Acanthidositta*.
2*a*. The same skull, top view, to shew the form of the nares.
Fig. 3. The skull of *Synallaxis ægithaloides*, side view, to shew the schizorhinal nares.
3*a*. The same skull, to shew the form of the palate.
3*b*. The same skull, top view, to shew the form of the nares.
Fig. 4. The pterygo-palatine articulation of *Acanthidositta*.
Fig. 5. The pterygo-palatine articulation of *Pitta* for comparison with that of *Acanthidositta*.



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